

OPTIMIZED ULTRAVIOLET REFLECTING MULTI-LAYER
COATING FOR ENERGY EFFICIENT LAMPS

ABSTRACT OF THE DISCLOSURE

A metal halide lamp (10) includes a light-transmissive envelope (12) which encloses a metal halide pool (30) for generating a discharge when spaced apart electrodes (20, 22) within the envelope are supplied with an electric current. A multi-layer coating (40) is deposited on a surface (42) of the envelope. The coating includes several layers of at least two materials of different refractive index, which, in combination, reflect radiation in the UV region of the electromagnetic spectrum. Rather than optimizing the coating for a normal (i.e., 0°) angle of incidence on the coating, the multi-layer coating is optimized at an angle which is selected to be within 10° of the mean angle (α) of incidence of the UV radiation on the arctube surface, thereby increasing the amount of UV radiation which is returned to the metal halide pool. The coating is preferably optimized for high reflectivity in the UV-region of the spectrum and high transmission in the visible region of the spectrum to maximize useful light output while reflecting UV light back to the metal halide pool for improved heating of the pool.